

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 & 13 have been considered but are moot in view of the new ground(s) of rejection.

Response to Remarks

Applicant asserts that, *"the pending claims are believed to be in condition for allowance, and withdrawal of the outstanding rejection is respectfully requested"*.

The examiner respectfully disagrees. A new ground of rejection has been issued.

Claim Objections

1. Claims (1, 4-7, 11-13, 18-19) are objected to because of the following informalities:

In claims 1 (line 16) & 13 (line 14), the limitation of "to determination" should be rewritten as "to determine". In claim 1 (line 22) & 13 (line 20), the limitation of, "a ratio based the counts" should be rewritten as "a ratio based on the counts". In claim 1, line 10, the limitation of, "if" should be rewritten as "when" to preclude the claim from being indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims (1, 4-7, 11-13 & 18) rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (hereinafter Chen) (US Publication 2003/0058923 A1) in view of Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2)**

Re claim 1, Chen discloses a Method for selecting frequency channels in a data transmission method that uses a frequency hopping method, comprising: determining an existence of interference on a frequency channel by detecting multiple erroneous transmissions in the frequency channel at a time that is independent of the other channels (See paragraph 62); wherein determining whether interference exists further comprises: identifying a number of error free transmissions on the channel within the predetermined period of time (See paragraph 66); and using both the number of erroneous transmissions and the number of error free transmissions to determination whether interference exists on the channel (See paragraph 66), and wherein using both the erroneous and error free transmissions comprises: incrementing a first counter each time an erroneous transmission is identified within the predetermined time period (See paragraph 66); incrementing a second counter each time an error free transmission is

identified within the predetermined time period (See paragraph 66); generating a ratio based the counts of the first and second counters after the predetermined time period has elapsed (See paragraph 66) ; and determining that interference exists on the channel when the ratio exceeds a predetermined threshold. (See paragraphs 90)

Although the concept of eliminating and reinserting frequency hopping channels are well in known in frequency hopping systems, the reference of Chen fails to explicitly teach eliminating the frequency channel from a frequency hopping sequence when a determination is made that interference exists thereon; measuring a strength of external signals within a frequency range of an eliminated frequency channel; and reinserting the frequency channel into the frequency hopping sequence if the measured strength is below a prescribed threshold value.

However, Gan does. (See col. 6, lines 30-34, 47-48, 50-54, 63 - col. 7, line 2, col. 7, lines 51-55, col. 12, lines 36-39, col. 20, lines 46-52, col. 12, lines 36-39.) Gan discloses eliminating the frequency channel from a frequency hopping sequence when a determination is made that interference exists thereon (col. 6, lines 30-34); measuring a strength of external signals within a frequency range of an eliminated frequency channel (col. 6, lines 30-34, 47-48, 50-54, 63 - col. 7, line 2, col. 7, lines 51-55, col. 12, lines 36-39); and reinserting the frequency channel into the frequency hopping sequence if the measured strength is below a prescribed threshold value. (col. 20, lines 46-52, col. 12, lines 36-39.) Furthermore, re-testing and re-determination of the channel performance must be done in order to select good channels and not bad channels. This is due to interference changing over time - some "previously good

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channels may become bad and vice versa". One way to retest the channels is to measure the RSSI of the channel. If "there is not interference, the RSSI will be low".

Re claim 4, the combination of Chen and Gan further discloses that wherein detecting an erroneous transmission further comprises using checksums that are added to block- transmitted data at an end thereof. (In Gan, see col. 13, lines 13-18)

Re claim 5, the combination of Chen and Gan further discloses that wherein using checksums comprises adding a CRC (Cyclic Redundancy Check) code to each data block at the end thereof. (In Gan, see col. 13, lines 30-38)

Re claim 6, the combination of Chen and Gan further discloses that wherein the data transmission method comprises a timeslot method, and measuring the external signal strength comprises measuring during unused timeslots. (In Chen, see paragraph 62)

Re claim 7, the combination of Chen and Gan further discloses that wherein measuring the external signal strength comprises performing a field strength measurement based on the RSSI (Radio Signal Strength Indication) method. (In Gan, see col. 12, lines 21-53)

Re claim 11, the combination of Chen and Gan further discloses that A method for data transmission between at least two stations via radio links using the frequency hopping method and the frequency channel selection method of Claim 1. (In Gan, see col. 17, lines 35-37)

Re claim 12, the combination of Chen and Gan further discloses that wherein the method is based on one of the transmission standards Bluetooth, WDCT, DECT or HomeRF. (In Gan, see col. 7, lines 51-52)

Claim 13 has been analyzed and rejected w/r to claim 1 above.

Claim 18 has been analyzed and rejected w/r to claim 1 above.

1. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (hereinafter Chen) (US Publication 2003/0058923 A1) and Gan et al. (hereinafter Gan) (US Patent 7,027,418 B2), as applied to claims 1 & 13 above, and further in view of Knuth et al. (hereinafter Knuth) (US Patent 5,418,839)

Re claim 19, the combination of Chen and Gan further discloses that wherein determining that interference no longer exists further comprises: comparing a count of the counter to a predetermined value; and determining that interference no longer exists when the count is less than or equal to the predetermined value. (In Gan, see col. 15, line 1-25 and table 1. In table 1, ten tests are conducted on each channel. In this case lets take channel "n-1". These tests may be comprised of measuring the RSSI of each channel. If the RSSI is found to be low, the test result will yield high, thus decrementing

the number of counts and increasing the possibilities that channel “n-1” will yield to be a good channel. Furthermore, it’s up to the designer to decide if he/she wants to increment/decrement either the erroneous transmission or the error-free transmission to determine if the channel can be classified as either good or bad.)

But the combination of Chen and Gan fails to explicitly teach decrementing a counter when the measured signal strength is less than a predetermined threshold.

However, Knuth does. (See fig. 2: 17 & col. 6, lines 44-60) Knuth discloses a system for providing a channel selection apparatus that optimizes the selection of an interference-free channels by adding to a counter when interference is present and subtracting when there is no interference present.

Therefore, taking the combined teachings of Chen, Gan and Knuth as a whole. It would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Chen, as modified by Gan, in the manner as claimed and as taught by Knuth, for the benefit of optimizing the selection of channels in the communication system.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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